SOV/126-7-5-6/25

AUTHORS: Giberman, M.Sh., and Kontorovich, N.P.

TITLE: On the Dependence of Parameters of a Semiconductor on the Density of Impurities (O zavisimosti parametrov poluprovodnika ot kontsentratsii primesey)

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 5, pp 673-676 (USSR)

ABSTRACT: S.V. Vonsovskiy and his co-workers developed recently a multi-electron theory of semiconductors (Refs 3,4) in which the interacting electrons were represented as a dynamically equivalent ideal quasi-particle gas. Properties of this gas are determined by the properties of the multi-electron assembly, and in the case of an impurity semiconductor should depend on the impurity density. The present authors used Vonsovskiy's theory to discuss the energy spectrum of an n-type atomic semiconductor with impurities, such as germanium with arsenic (Vonsovskiy's theory can be used also to study the energy spectrum of a semiconductor with accepter impurities). The authors deduced dependence of the activation energy and the effective mass of current carriers on the impurity density. [The paper is

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On the Dependence of Parameters of a Semiconductor on the Density of Impurities

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entirely theoretical.] Acknowledgements are made to S.V. Vonsovskiy, Yu.P. Irkhin and I.M. Tsidil'kovskiy for their advice.

Card 2/2

There are 8 references, 5 of which are Soviet and 3 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Urals State University)

SUBMITTED: March 30, 1958

SOV/126-8-2-3/26

AUTHORS: Giterman, M. Sh. and Moskalenko, S. A.

TITLE: On the Structure of Energy Bands in Ionic Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 2, pp 170-175 (USSR)

ABSTRACT: The interaction between electrons in crystals was taken into account in the Shubin-Vonsovskiy polar model (Ref 1). On the basis of this model Vonsovskiy and his collaborators (Ref 2) have considered a large number of static and kinetic effects in metals and semiconductors and have obtained good agreement with experimental data. The method of second quantization turned out to be a convenient mathematical apparatus and was developed by Bogolyubov (Ref 3) for application to crystals. However, in Ref 3 only the simpler case of s-electrons was considered and excited states were not taken into account. Seidov and Galishev (Ref 4) have taken into account one non-degenerate p-state which gave an overlap of energy bands in the spectrum of elementary excitations even in the zero-order approximation. The fact that degeneracy with respect to the magnetic quantum number was neglected in all the above papers means that it was not possible to

obtain, for example, the anisotropy of the effective masses of current carriers and certain other effects. The present authors have generalised the polar model to the case of ionic crystals (NaCl, KCl) in Ref 5. The present paper is also concerned with the problem and gives special attention to the degeneracy of the electron states at the Cl points, and the possibility of the motion of current carriers of each sign over both cations and anions. The first of these effects has an important influence on the energy spectrum of the "holes", and in particular, on the anisotropy of their effective masses. The second effect leads to a change in the form and position of the energy bands, i.e. it has an influence on the properties of the current carriers. The work reported in Refs 6 and 7 may be considered as the zero-order approximation of the solution now given. For simplicity, lattice vibrations are not taken into account. An ideal cubic lattice is considered with two types of points g and h occupied by positive and negative ions respectively, the ions being considered as fixed. In the ground state, the electron

density distribution exhibits maximum non-uniformity. Near the g-points (Na, K) there are no valence s-electrons, while at the h-points (Cl) there are six electrons in the p-state having $m = 0, \pm 1$ and $\sigma = \pm 1/2$. The excitation of the system is connected with a reduction in the non-uniformity in the charge distribution and the appearance of elementary excitations of different signs. These excitations are called electrons and holes, by analogy with the one-electron theory and, correspondingly, the authors refer to electron and three-hole energy bands. The energy operator for the problem is of the form given by Eq 1 (N.N. Bogolyubov - Ref 3). The results obtained are substantially in agreement with those reported by Howland in Ref 9, except that in the present paper the interaction between the valence bands and the conduction band is taken into account. It is shown that the spim orbit interaction is not an essential factor leading to the anisotropy in the effective masses of the current carriers. An approximate diagonalization of the Hamiltonian for the many electron problems is carried

On the Structure of Energy Bands in Ionic Crystals SOV/126-8-2-3/26

out and a group theory method is used in studying the structure of the bands in some directions in K-space.
There are 1 figure and 9 references, of which 8 are Soviet and 1 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A.M. Gor'kiy (Ural State University imeni A.M. Gor'kiy)

SUBMITTED: July 8, 1958

Card 4/4

S/181/60/002/01/28/035
P008/B014

AUTHORS: Giterman, M. Sh., Irkhin, Yu. P.

TITLE: Theory of Electrical Conductivity of Antiferromagnetic Polar Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 1, pp. 144-152

TEXT: The authors calculated the energy spectrum of the carriers of antiferromagnetic polar crystals with intrinsic and extrinsic conductivity, taking account of the electron - background interaction and the effect of the magnetic order. The latter determines the change in activation energy and effective mass near the Néel temperature. The results obtained were compared with experimental data. The theoretical results contain the quantity of the s-d exchange interaction I and the quantity $|q^{-1}(a)|$ as parameters. The latter is proportional to the width of the conduction band. As usual, these quantities are parameters of the theory and are determined from a comparison with the experiment. They are related to the experimental quantities ΔE and $\Delta \ln \sigma$ by equations

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(22) and (25). Strictly speaking, it would be necessary for a quantitative confirmation of the theory to calculate galvanomagnetic, thermoelectric, and thermomagnetic phenomena according to the scheme suggested in this article. This would lead to additional equations relating the quantities I and $Q^1(a)$ to the quantities observed. The "jump" of activation energy was found by several research workers in numerous experiments. From equation (19) it follows that in addition to the "jump" of activation energy also a "jump" of the logarithm of conductivity occurs at the Néel point. In the case of $\Delta E > 0$, $\Delta \ln \sigma$ consists of two terms with reverse sign, so that it may have any value and sign. When $\Delta E < 0$, $\Delta \ln \sigma$ must be positive and not smaller than $\frac{|\Delta E|}{kT_N}$. The latter fact may also be used to verify the theory suggested. More detailed experimental data are available on the conductivity of NiO. Several research workers obtained both positive (Ref. 10) and negative (Ref. 11) values for ΔE. The "jump" $\Delta \ln \sigma$ is mentioned only in one publication (Ref. 12). The existence of a "jump" alone is striking and necessitates further

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Theory of Electrical Conductivity
of Antiferromagnetic Polar Crystals

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B008/B014

experimental studies. The authors thank Professor S. V. Vonsovskiy for his discussion of the article under review. There are 3 figures and 13 references, 5 of which are Soviet.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet (Ural State University). Institut fiziki metallov AN SSSR, Sverdlovsk (Institute of Metal Physics, AS USSR, Sverdlovsk)

SUBMITTED: January 11, 1959

Card 3/3

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S/18:/60/002/008/049/052/XX
B006/B070

24,4500

AUTHORS: Vonsovskiy, S. V., Giterman, M. Sh.

TITLE: Many-electron Theory of Ion Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 8, pp. 1793-1805

TEXT: Ion crystals are characterized by strong inhomogeneities of the electron density at neighboring lattice points. The binding forces have, therefore, essentially an electrostatic character. The interaction of electrons with one another and with lattice vibrations must be taken into account in the theory of ion crystals. Such studies were made earlier by S. I. Pekar (Ref. 1). In the present paper, the authors describe the investigation of ion crystals (phenomenological and model treatment) within the framework of a many-electron theory by means of the method of elementary excitations. The approximation used here is valid only for weakly excited states of the many-electron system. A consistent handling of the problem by quantum mechanics is possible only under this limitation. When the excitation is weak and an energy gap exists, it is possible to separate the energy spectrum in good approximation into individual branches

Many-electron Theory of Ion Crystals

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B006/B070

representing different aspects of the collective motion of the many-electron system. The theoretical studies are made on the basis of the Hamiltonian of the ion crystal in second quantization representation:

$$H=\sum_{\alpha\alpha'} L(\alpha\alpha')a^{+}_{\alpha}a_{\alpha'}+\sum_{\alpha_1\alpha_2\alpha'_1\alpha'_2} F(\alpha_1\alpha_2\alpha'_1\alpha'_2)a^{+}_{\alpha_1}a^{+}_{\alpha_2}a_{\alpha'_1}a_{\alpha'_2}+\sum_{\alpha\alpha'\varkappa}\left[K(\alpha\alpha'\varkappa)a^{+}_{\alpha}a_{\alpha'}\left(\xi_{\varkappa}+\xi^{+}_{\varkappa}\right)\right]$$

$$+\sum_{\varkappa}\hbar\omega_{\varkappa}\xi^{+}_{\varkappa}\xi_{\varkappa}$$

Here, a^{+}_{α} and a_{α} are Fermi's annihilation and production operators of the electrons in the state α; $\xi^{+}_{\varkappa}$ and $\xi_{\varkappa}$ are Bose's production and annihilation operators of the phonons with momentum $\varkappa$ and energy $\hbar\omega_{\varkappa}$. The functions L, F, and K may be determined either phenomenologically, or in the microscopic model representation as given in (2). H can be represented by: $H = E_0 + H^{Fermi} + H^{Bose} + H^{Fermi\text{-}Bose}$. The Hamiltonian H^{Fermi} for an alkali-halide crystal is represented by (4) and the Fermi branch of elementary excitations are studied for the following special cases: 1) a very simplified model neglecting the electron-phonon interaction and the electron degeneracy; 2) neglecting the electron-phonon interaction but taking account of the degeneracy; 3) weak electron-phonon interaction; 4)

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Many-electron Theory of Ion Crystals

S/181/60/002/008/049/052/XX
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strong electron-phonon interaction in adiabatic approximation; 5) impurity conductivity; 6) ion crystal whose one component is a transition metal. In the last section of the paper, the Bose branch of elementary excitations is briefly discussed. There are 24 references: 22 Soviet, 1 US, and 1 British

ASSOCIATION: Ural'skiy gosudarstvennyy universitet im. Gor'kogo (Ural State University imeni Gor'kiy)

SUBMITTED: December 24, 1959

Card 3/3

S/126/60/009/03/002/033
E032/E414

AUTHORS: Petrov, A.N., Taluts, G.G. and Giterman, M.Sh.

TITLE: On the Theory of the Stark Effect for Excitons in Ionic Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 327-331 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors considered the interaction of excitons with lattice vibrations. The aim of the present note is to generalize that calculation to the case when an external electric field is present. The shift of the energy levels of the exciton in the external field was considered by Korenblit (Ref 2), Samoylovich and Korenblit (Ref 3) and Gross et al (Ref 4), using the single particle approach but they did not include electron-electron and electron-phonon interactions which, in general, will have an effect on the dependence of the energy level shift on the external field. In the present note, the excitons are looked upon as Bose-type collective excitations of a many-electron system. Using the Hamiltonian given by Eq (2) it is shown that if the electron-electron and electron-phonon

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24.5400

AUTHORS: Voronel', A. V., Giterman, M. Sh.

TITLE: The Hydrostatic Effect Near the Critical Point of a Liquid

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 1162 - 1163

TEXT: Near the critical point of a pure substance, its compressibility increases to an unlimited extent; therefore, already a slight change of pressure, caused by the pressure of the upper layers of the liquid upon the lower ones, may be of essential importance. For this case, the authors theoretically investigated the curves of state p(V) and T(V). The change in pressure with height is given by $dp = (\mu g/V)dh$, where V is the specific volume at the height h, and μ is the molecular weight. If p and V deviate only little from the critical values, then, if $T = T_c$, $dh/dV = (B/2\mu g)V(V-V_c)^2$ and $V = V_c - \alpha(h-h_o)^{1/3}$ with $\alpha = (6\mu g/BV_c)^{1/3}$, where h_o denotes the integration constant which gives the height at which

The Hydrostatic Effect Near the Critical Point of a Liquid

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the critical conditions are satisfied; $B = (\partial^3 p/\partial V^3)_{T_c}$. The mean specific volume in the entire vessel is experimentally measurable, and so is the pressure at a certain level. If p_c predominates at $h=0$, one obtains $V_{mean} = \frac{1}{H}\int_0^H V(h)dh = V_c - \frac{3}{4H}\left[(H-h_o)^{4/3} - h_o^{4/3}\right]$. A numerical estimate shows that for all substances at $0 < h_o < H$ and $H \sim 10$ cm, $(p_o-p_c)/p_o \sim 10^{-4}$-$10^{-5}$, i.e., p_o may be put equal to p_c. As B is very small, V_{mean} may be expected to deviate considerably from V_c at $p_o \approx p_c$. $|V_{mean}-V_c|$ attains its maximum value at $h_o=0$ and $h_o=H$. In the case of coexistence of liquid and vapor, the p(V) and T(V) curves, respectively, show a straight part of the width $\Delta = \frac{3}{2}(6\mu gH/BV_c)^{1/3}$. This curve is, besides the ordinary curve, shown in a diagram. Such a shape has actually been observed in the case of xenon, ethane, and ethylene. For xenon, the ratio of the vessel

The Hydrostatic Effect Near the Critical Point of a Liquid

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heights in two experiments was H_1/H_2 = 19 cm/13 cm = 1.46 and $(\Delta_1/\Delta_2)^3$ = 1.57, and for ethylene H_1/H_2 = 2.5 and $(\Delta_1/\Delta_2)^3$ = 2.56; these data agree well with the formula for Δ. From an experimental determination of Δ it is possible to determine B from this formula. Thus, one obtains for xenon, if H = 19 cm, Δ = 0.20 $g.cm^{-3}$, $B \approx -4.10^{-5} atm/cm^9$. The authors thank M. Ya. Azbel' for discussions. There are 1 figure and 5 references: 2 Soviet and 3 Canadian.

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (Institute of Physics, Technology, and Radio Engineering Measurements)

SUBMITTED: July 26, 1960

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S/056/61/041/002/017/028
B111/B112

AUTHOR: Giterman, M. Sh.

TITLE: A mechanism of energy absorption in anisotropic bodies

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 2, 1961, 507 - 511

TEXT: The author attempts to study the absorption of the energy of an electromagnetic field whose frequency lies in the audiofrequency range. This absorption is due to an anisotropic magnetic susceptibility or electric polarizability of a solid in a viscous liquid. Such a body contains a magnetic (or electric) moment in an external variable field. Since this moment does not coincide with the direction of the field this may lead - under certain conditions - to a periodic motion of the body and to a corresponding energy absorption. The author considers the magnetic moment of a spherical nucleus of the solid phase in a liquid. An undamped motion of this nucleus is possible only with an anisotropy $\Delta\chi = \chi_z - \chi_x \neq 0$

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where χ is the susceptibility tensor. If $\omega_z = 0$ and $\psi_1 \omega_x + \psi_2 \omega_y = 0$ (ψ_i - Euler angles), i. e. under the effect of an external magnetic field, the nucleus can rotate neither in a plane which is perpendicular to the direction of the external field nor in the plane xy in which susceptibility is symmetrical. The characteristics of a continuous motion are obtained from the solution of equation

$$\ddot{\theta} + 2\varkappa\dot{\theta} + \omega_0^2(1 + \alpha\cos 2pt)\theta + V(t, \theta) = 0,$$

$$V(t, \theta) = -\tfrac{2}{3}\omega_0^2(1 + \alpha\cos 2pt)\theta^3.$$

θ is the Euler angle, $\varkappa = \gamma/(2I)$, $\gamma = 8\eta R^3\lambda$, R is the radius of the nucleus, η the viscosity coefficient of the liquid, $I = 8\eta R^5/15$, $\omega_0^2 = F_0^2\Delta\chi/(2I)$, $F = F_0\cos pt$ is the external field, α is a parameter. With neglection of the cubic terms the author obtains the following expression for the frequency dependence of the oscillation amplitude A:

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$A^2 = 2\omega_0^{-2}\left[\omega_\partial^2 - p^2 \pm (\omega_\partial^2/4 - 4k^2p^2)^{1/2}\right]$. A periodic oscillation occurs, however, only if $\omega_\partial^2 > 4kp$. The absorption coefficient is determined from $\gamma = 8\pi|F|/(pF_\partial^2 V)$, where $F/V = -\beta\dot{\Theta}^2/(2V)$ is the dissipation function.

D. N. Astrov is mentioned. The author thanks A. V. Voronel' and I. Ye. Dzyaloshinskiy for advice and discussion. There are 1 figure and 6 Soviet references.

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (Institute of Physicotechnical and Radiotechnical Measurements)

SUBMITTED: March 2, 1961

Card 3/3

APPROVED FOR RELEASE: Tuesday, September 17, 2002 CIA-RDP86-00513R0005

37952

S/181/62/004/005/055/055
B162/B108

24.7700

AUTHORS: [illegible], Krol', L. Ya., Medvedev, V. A., [illegible]

TITLE: [illegible] conductivity in n-type [illegible]

SOURCE: [illegible] tverdogo tela, v. [illegible], no. [illegible], [illegible]

TEXT: Results are given of measurements of the resistivity ρ, the Hall coefficient R and the magnetic resistance $\frac{\Delta\rho}{\rho}$ on single crystals of n-type [illegible] with impurity concentrations of 10^{16} - 10^{17} cm^{-3}, at which interaction between the impurities and formation of an impurity band not fusing with the conduction band can be expected. The specimens were produced by zone melting in a horizontal boat of an ingot of chemically pure [illegible]. Analysis of the [illegible] shows that the single crystal [illegible] at temperatures below [illegible]°K display conductivity in the impurity band. [illegible] This effect is absent in the more contaminated single-crystal and polycrystalline specimens. The Hall mobility in the conduction band

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APPROVED FOR RELEASE: [illegible] R0005

is [illegible] greater than in the impurity band. [illegible] magnetic [illegible] single-crystal specimens measured in a field of [illegible] be [illegible] at temperatures below [illegible]$^{\circ}K$, and for a polycrystal [illegible] over the whole range of [illegible]$^{\circ}$ - 300$^{\circ}K$. The conductivity in the impurity band in [illegible] does not lead to a change in the sign of the Hall effect at the lowest temperatures, as might have been expected for holes in the impurity band.

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh [illegible] (Institute of Physicotechnical and Radiotechnical Measurements), Moscow

SUBMITTED: [illegible] 1961 (initially)
February 14, 1962 (after revision)

GITERMAN, M.Sh.; KROL', L.Ya.; MEDVEDEV, V.A.; ORLOVA, M.P.; PADO, G.S.

Conductance in the impurity zone in n-GaAs. Fiz. tver. tela 4 no.5:1383-1385 My '62. (MIRA 15:5)

1. Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy, Moskva.
(Gallium arsenide--Electric properties)

ACCESSION NR: AP4019235 S/0056/64/046/002/0673/0676

AUTHOR: Azbel', M. Ya.; Voronel' A. V.; Giterman, M. Sh.

TITLE: Contribution to the theory of the critical point

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 673-676

TOPIC TAGS: critical point, free energy, equation of state, coexistence curve, phase equilibrium, free energy, specific heat, singularity, critical volume

ABSTRACT: In view of the discrepancy with ordinary theory displayed by the experimental results of the VNIIFTRI Thermodynamics Laboratory (M. I. Bagatskiy, A. V. Voronel', V. G. Gusak, ZhETF, v. 43, 728, 1962; A. V. Voronel', Yu. R. Chashkin, V. A. Popov, V. G. Simkin, ZhETF, 45, 828, 1963), where a logarithmic singularity was observed for the temperature dependence of the specific heat C_v near the critical volume, the authors propose a new theory in which the form of the free energy near the critical point agrees with these experimental data. In both the existing and modified theories the order of the smallest nonvanishing derivative of the pressure with respect to the volume at the critical point determines

ACCESSION NR: AP4019235

uniquely the form of the phase-equilibrium point near the critical point, namely proportionality of the relative temperature to the relative volume quared. Several ways of chedking the consequences due to the presence of the singularity at the critical point will be treated in a future article. Orig. art. has: 6 formulas.

ASSOCIATION: Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy (Institute of Physicotechnical and Radio Technical Measurements)

SUBMITTED: 12Jul63 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 004 OTHER: 001

Card 2/2

GITERMAN, M.Sh.

Form of the coexistence curve of liquid and gas near the critical point. Zhur. fiz. khim. 39 no.4:989-993 Ap '65.

(MIRA 18:1)

1. Nauchno-issledovatel'skiy institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy. Submitted Feb. 17, 1964.

L 27159-66 EWT(1) LIP(c)
ACC NR: AP6014049 SOURCE CODE: UR/0056/66/050/004/1084/1094

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AUTHOR: Giterman, M. Sh.; Gertsenshteyn, M. Ye.

ORG: Institute of Physicotechnical and Radiotechnical Measurements (Institut fiziko-tekhnicheskikh i radiotekhnicheskikh izmereniy)

TITLE: Theory of the Brownian motion and the possibility of application of the theory for investigating the critical point of a pure substance

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 4, 1966, 1084-1094

TOPIC TAGS: Brownian motion, critical point

ABSTRACT: By virtue of the fluctuation and dissipation theorem, the characteristic features of Brownian motion near the critical point of a pure substance were defined by the particular dependence of the moving particle on frequency of the force acting on it. For a macroscopic particle, the determination of mobility is a hydrodynamic problem. To solve this problem near the critical point, the high compressibility of the liquid and the possible effect of the large radius of the density correlations should be taken into account. General formulas for mobility and Brownian displacement were obtained, and the characteristic frequencies which are important in the critical region were evaluated. It was found that for displacements occurring during periods exceeding the characteristic time $\tau_1 = |\omega_{01}|^{-1}$ (ω_{01} is the

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ACC NR: AP6014049

characteristic frequency), the mean square displacement of a Brownian particle is determined by the usual Einstein equation. For times less than τ_1, the equation also contains a coefficient dependent on the ratio of the displacement and the volume of viscosities. The presence of a large correlation radius for the density fluctuations near the critical point does not significantly modify the nature of the Brownian motion, and, in essence, reduces to a certain degree the Brownian particle radius. These conclusions are based on the assumption that the absence of a strong frequency dependence of viscosity (for periods of fluctuation of the order of the Brownian particle displacement times involved). The authors thank Academician M. A. Leontovich for his advice and discussions. Orig. art. has: 43 formulas. [Based on authors' abstract.] [NT]

SUB CODE: 20/ SUBM DATE: 11Nov65/ ORIG REF: 008

GITERMAN, R.Ye.

Some data on the history of the vegetation of the lower reaches of the Chusovaya River during the Quaternary period. Biul.Kom.chetv.per. no.17: 91-100 '53. (MLRA 6:11)
(Chusovaya valley--Paleobotany) (Paleobotany--Chusovaya valley)

KHOREVA, I.M.; GITERMAN, R.Ye.

Recent data on stratigraphic correlation of deposits in the lower course of the Aldan River. Dokl.AN SSSR 138 no.3:659-662 My '61. (MIRA 14:5)

1. Geologicheskiy institut AN SSSR. Predstavleno akademikom V.N. Sukachevym.

(Aldan Valley--Paleobotany, Stratigraphic)

GITERMAN, Roza Yevseyevna; ZAKLINSKAYA, Ye.D., otv.red.; PEYVE, A.V., glavnyy red.; MARKOV, M.S., red.; MENNER, V.V., red.; TIMOFEYEV, P.P., red.; RABINOVICH, L.A., red.izd-va; DOROKHINA, I.N., tekhn.red.

[Stages in the development of Quaternary vegetation in Yakutia and their stratigraphic significance] Etapy razvitiia chetvertichnoi rastitel'nosti IAkutii i ikh znachenie dlia stratigrafii. Moskva, Izd-vo Akad. nauk SSSR, 1963. 191 p. (Akademiia nauk SSSR. Geologicheskii institut. Trudy, no.78). (MIRA 16:8)

1. Zaveduyushchaya laboratoriyey sporovo-pyl'tsevogo analiza Otdela chetvertichnoy geologii Geologicheskogo instituta AN SSSR (for Zaklinskaya). 2. Chlen-korrespondent AN SSSR (for Peyve).
(Yakutiya—Paleobotany, Stratigraphic)

LAVRUSHIN, Yu.A.; GITERMAN, R.Ye.

Principal stages in the development of vegetation in the lower Indigirka Valley during the Quaternary period. Dokl. AN SSSR 139 no.3:681-684 Jl '61. (MIRA 14:7)

1. Geologicheskiy institut AN SSSR. Predstavleno akademikom V.N. Sukachevym.
(Indigirka Valley--Paleobotany, Stratigraphic)

LAVRUSHIN, Yu.A.; DEVIRTS, A.L.; GITERMAN, R.Ye.; MARKOVA, N.G.

Primary data on the absolute chronology of principal events in the Holocene of the northeastern part of the U.S.S.R. Biul.Kom. chetv. per. no. 28:112-126 '63. (MIRA 17:5)

GITERMAN, R.Ye.; GOLUBEVA, L.V.; ZAKLINSKAYA, Ye.D.; KORINEVA, Ye.V.; MATVEYEVA, O.V.

Features of the vegetation cover of Kazantseva Interglacial Siberia. Dokl. AN SSSR 152 no.4:937-940 O '63. (MIRA 16:11)

1. Geologicheskiy institut AN SSSR. Predstavleno akademikom V.N. Sukachevym.

GITERMAN, R. YE.; GOLUBEVA, L. V.

"Developmental history of the vegetation of eastern Siberia during the Anthropogene Period."

report submitted for the 7th Intl Cong, Intl Assoc for Quaternary Research, Boulder & Denver, Colorado, 30 Aug-7 Sep 65.

GITERMAN, R.Ye.; GOLUBEVA, L.V., KOBRENOVA, Ye.V.; MATVEYEVA, O.V.

Characteristics of the vegetative cover of the Zyryanka glacial period in Siberia. Izv. AN SSSR. Ser. geol. 30 no.3:115-128 Mr '65. (MIRA 18:3)

1. Geologicheskiy institut AN SSSR, Moskva.

DAVANKOV, A.B.; APTOVA, T.A.; GITERMAN, Z.M.

Oxidation-reduction processes and silver concentration on electron-exchange polymers. Zhur.prikl.khim. 34 no.8:1852-1857 Ag '61. (MIRA 14:8)

(Silver)
(Oxidation—Reduction reaction)
(Ion exchange resins)

S/137/62/000/003/046/191
A006/A101

AUTHORS: Gitgarts, D. A., Polyakov, A. Yu., Rudneva, A. V.

TITLE: Concentration of vanadium slags with high phosphorus content

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 22, abstract 3G144 (V sb. "Fiz.-khim. osnovy proiz-va stali", Moscow, AN SSSR, 1961, 271 - 276)

TEXT: The process of concentrating poor V-slags was studied in a laboratory. For this purpose a fine-crushed slag specimen was processed in a water bath for one hour with a HCl solution at 70 - 75°C, by stirring periodically. An amount of 5 - 10 ml gelatin was added to the solution, 5 - 10 minutes before removing it from the bath, to bring about coagulation of silica. The non-dissolved precipitate was then filtered off and boiled for 1 hour in a 10% soda solution, in order to bring SiO_2 into a soluble state. At silica contents exceeding 20%, the concentrates may contain $\leq$ 10 - 12% V_2O_3. Slags containing 14 - 18% SiO_2, make it possible to obtain concentrates with 10 - 15% V_2O_3 at a consumption of 2.5 - 3.0 g HCl per 1 ton of slag. Extraction of V is then 80 -85%. In such a manner, the chemical concentration method makes it possible to obtain V concentrates whose V content is prac-

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Concentration of vanadium slags with...

tically similar to that of V-slags used in the USSR, at sufficiently high values of V extraction into concentrates.

O. Svodtseva

[Abstracter's note: Complete translation]

GITGARTS, D.A., inzh.; KOLGANOV, Ye.P., inzh.

Automatic control of the power factor of an induction melting apparatus. Elektrotekhnika 35 no.4:36-38 Ap '64. (MIRA 17:4)

GITGARTS, Dmitriy Abramovich; POLISHCHUK, Yanina Aleksandrovna; EDEMSKIY, V.M., red.

[Automatic control of induction-heated melting furnaces] Avtomaticheskoe regulirovanie induktsionnykh plavil'nykh ustanovok. Moskva, Energiia, 1965. 78 p. (Biblioteka elektrotermista, no.24) (MIRA 18:7)

GITGARTS, D.A., inzh.; POLISHCHUK, Ya.A., inzh.; KOLGANOV, Ye.P., inzh.

Automatic regulator for induction smelting systems using commercial frequencies. Elektrotekhnika 36 no.5:30-32 My '65.
(MIRA 18:5)

S/126/61/011/004/011/023
E021/E435

AUTHORS: Arbuzov, M.P. and Gitgarts, M.I.

TITLE: Study of the State of the Solid Solution of ЭИ437А (EI437A) alloy During Ageing

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.11, No.4, pp.568-574

TEXT: The kinetics of the decomposition of the solid solution were studied by X-ray analysis. The composition of the alloy EI437A was Cr 20.82, Ti 2.45, Al 0.91, Fe 0.57, Si 0.32, Mn 0.25, Cu 0.05, C 0.04, P 0.008, S 0.004, Pb 0.0003% and remainder Ni. Samples were heated at 1095°C for eight hours and air-cooled. They were then aged at 600, 700, 750, 800, 850 and 900°C for up to 150 hours. Copper radiation was used together with nickel and aluminium filters. The lattice parameter could be measured with an accuracy of ± 0.0001 Å. Fig.1 shows the change in lattice parameter with time at different temperatures. The most intensive decomposition occurred at 800 to 850°C and the biggest change occurred in the first 5 to 10 hours of ageing. At low temperatures the decomposition of solid solution is retarded because of the low diffusion mobility of the

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Study of the State of ...

atoms. At higher temperatures the diffusion is much greater and decomposition takes place much more rapidly. At 900°C, however, the solubility of Al and Ti is considerably higher than at 850°C. Therefore, after a few hours ageing, the composition approaches equilibrium for that temperature. Fig.2 shows the change in the width of the (420) line with ageing time at various temperatures. Further X-ray photographs were taken with non-moving samples. Fig.3 shows some of these photographs after 150 hours ageing. The reflections from the quenched sample show that the specimen was very homogeneous. In the samples aged at 750, 800 and 850°C there was considerable dispersion of the reflections and an increase in their number. At 600 and 700°C changes were noted after long ageing times. At 900°C the dispersion of the reflections is seen but their number and dimensions differ little from that of the quenched sample. The increase in the width of the line at 800 to 850°C is caused in the main by marked concentration inhomogeneities which occur during the ageing process. At 750°C decomposition is accompanied by continuously growing concentration inhomogeneities. At the same time, the regions of coherent reflections are breaking up. At 900°C, concentration

inhomogeneities arise and the regions of coherent reflection are relatively large. At 700°C, there are slight concentration inhomogeneities. The finely dispersed character of this probably leads to the formation of a fine mosaic structure with small misorientated regions of coherent reflection. There are 3 figures and 6 references: 5 Soviet and 1 non-Soviet.

ASSOCIATION: Kiyevskiy institut GVF
(Kiyev Institute GVF)

SUBMITTED: May 14, 1960 (initially)
December 10, 1960 (after revision)

22956
S/126/61/011/005/001/015
E193/E183

18.9200

AUTHORS: Arbuzov, M.P., and Gitgarts, M.I.

TITLE: X-ray investigation of the phase precipitated during ageing of the EI437A (EI437A) alloy

PERIODICAL: Fizika metallov i metallovedeniye, Vol.11, No.5, 1961, pp. 664-669

TEXT: The investigation described in the present paper was conducted in continuation of the earlier work (Ref.1: FMM, 1961, Vol.11, 568) concerned with the constitution and structure of aged alloy EI437A, consisting of (wt.%): 20.82 Cr, 2.45 Ti, 0.91 Al, 0.57 Fe, 0.32 Si, 0.25 Mn, 0.05 Cu, 0.04 C, 0.008 P, 0.004 S, 0.0003 Pb, remainder Ni. Cylindrical specimens 26 mm in diameter and 6 mm thick were solution-treated (eight hours at 1095 °C followed by air-quenching) after which they were aged at 600, 700, 750, 800, 850 and 900 °C for periods ranging up to 150 hours. The kinetics of the growth of the γ' precipitates was studied by studying the variation of the size of the regions of coherent scattering, this parameter being considered to be a sufficiently accurate criterion of the size of the γ'-phase particles, owing to

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X-ray investigation of the phase ..

the fact that these particles usually consist of single blocks. The X-ray diffraction analysis was carried out on cylindrical specimens 0.8 mm in diameter prepared from α'-phase particles which had been extracted from the aged specimens by electrolytic dissolution in an electrolyte containing 10 g ammonium sulphate and 10 g of citric acid in 1200 cc of water. Some X-ray work was also carried out on massive aged specimens. The dimension, D_x, of the mosaic blocks was determined from the width of the (111) and (420) lines, the (420) lines being used to determine the lattice parameter of the α' phase. Hardness of the aged specimens was also determined. The results are reproduced graphically in Figs. 1 and 2. In Fig.1 D_x (10^{-6} cm) is plotted against ageing time (hours) at temperatures indicated by each curve. (The size of the α'-phase particles in specimens aged at 600 °C was too small to be determined by the method employed). It will be seen that with increasing time and/or temperature of ageing, the size of the α' particles increases, the process being relatively slow at 700 and 750 °C, and very fast at 900 °C, so much so that the size of the α' particles after 25 hours' ageing at 900 °C is too large to be determined by X-ray diffraction. The lattice parameter of the

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X-ray investigation of the phase . . E193/E283

α' phase at 800-900 °C was found to be practically constant, which indicated that the composition of this phase in this temperature range is also practically constant. The X ray diffraction patterns obtained on specimens aged for 100 hours at 900 °C showed side by side with the lines of the disordered f.c.c. lattice of the α' phase, the presence of weak (100), (210), (211), (221) + (300), (310) and (321) lines indicating the existence of a superstructure. The fact that long-range order can exist in the α' phase in a wide temperature range indicates its relatively high stability. The lattice parameter of the α' phase determined on massive specimens was on average 0.008 Å smaller than that determined on α' particles extracted by electrolytic dissolution. This indicated that the α' particles in an aged alloy are subjected to tri-axial compression in the elastic range. Fig.2 shows hardness H_V of the aged specimens plotted against the ageing time at temperatures indicated by each curve. It will be seen that hardness of specimens aged at 600, 700 and 750 °C continuously increased with time, reaching after 150 hours the value of 223, 289 and 286 kg/mm^2 respectively, H_V of the solution-treated alloy being 155-160 kg/mm^2. The rate of hardening is at its maximum in the initial stages of the process.

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X-ray investigation of the phase

and slows down after the first 5-10 hours. This character of the hardness curves can be explained on the basis of kinetics of the decomposition of solid solutions, illustrated in Fig.3 (Ref.1), where the lattice parameter a (Å) of the solid solution is plotted against the ageing time (hours). It will be seen that the rate of decomposition in the initial stage of the process is fast as a result of which a large quantity of the α_1 phase is precipitated, although the particle size of the precipitate is relatively small. Hence the rapid increase in hardness of the alloy during this stage. On further ageing, the rate of decomposition decreases and the size of the precipitated α_1-phase particles increases at a rate which increases with the ageing temperature (see Fig.1); as a result of which the rate of hardening decreases. Low hardness of alloy aged at 600 °C is due to the small quantity of the α_1 phase present. The differences in hardness attained by ageing at various temperatures for various times can be explained by the difference in the quantity of the α_1 phase and/or in the size of the particles of the phase.
V.I. Arkharov is mentioned for his contribution in this field.
There are 3 figures, 1 table and 9 references: 8 Soviet and 1 non-Soviet.

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S/126/61/011/005/001/015
X-ray investigation of the phase E193/E183

ASSOCIATION: Kiyevskiy institut GVF (Kiyev Institute GVF).
SUBMITTED: June 25 1960 (initially),
February 1 1961 (after revision)

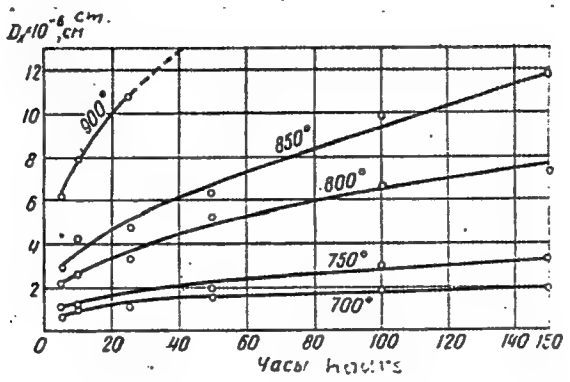

Fig. 1

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S/126/61/012/005/009/028
E193/E383

AUTHORS Arbuzov, M.P. and Gitgarts, M.I.

TITLE A study of thermal expansion of the solid solution [matrix] and the precipitated phase in the ЭИ437А (EI437A) alloy

PERIODICAL Fizika metallov i metallovedeniye v.12, no. 5 1961, 693 - 696

TEXT In the case of pure metals the thermal expansion coefficient, λ, decreases with increasing magnitude of interatomic forces and the object of the present investigation was to check whether the same applied to solid solutions and intermediate phases. To this end the temperature-dependence of λ of pure Ni and of both the solid-solution matrix and the precipitated α'-phase in solution-treated and aged alloy EI437A was determined. Instead of the usual dilatometric method X-ray diffraction was used to determine λ, which was calculated from data on the lattice parameter of the materials studied. Since the results of X-ray diffraction analysis of the α'-phase could have been affected by the fact that particles of this phase

A study of thermal expansion ....

in the actual alloy were subjected to compression the lattice parameter of this phase was determined on specimens obtained by electrolytic dissolution of the aged alloy EI437A. The X-ray diffraction measurements were taken at 20, 100, 200, 300, 400 and 500 °C. The results are reproduced in a graph where the lattice-parameter increment Δa Å is plotted against temperature (°C). Curves 1-3 relating, respectively to pure Ni, solid-solution matrix in alloy EI437A and the α'-phase. The calculated values of λ are given in a table. The results indicated that the atomic bond forces were lower in pure Ni, greater in the solid-solution matrix and greater still in the precipitated α'-phase. These findings were in agreement with previously established data (Ref. 4: G.V. Kurdyumov and N.T. Travina - Problemy metallovedeniya i fiziki metallov 1955, no. 4, 402) on the characteristic temperature of these materials which was 350 °C for Ni, 500 °C for the solid-solution matrix and 390 °C for the α'-phase. There are 1 figure, 1 table and 12 Soviet-bloc references.

ASSOCIATION: Kiyevskiy instute GVF (Kiyev Institute GVF)
SUBMITTED: May 3, 1961
Card 2/4 2

S/126/62/013/003/012/023
E021/E180

AUTHORS: Arbuzov, M.P., and Gitgarts, M.I.

TITLE: The problem of quantitative separation of phases by the method of anodic dissolution

PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.3, 1962, 411-414

TEXT: The commercial alloy ЭИ 437А (EI437A) of great high-temperature-strength was used in the investigation. Disc-shaped samples (26 mm diameter, 6 mm high) were prepared and cooled in air after holding at 1095 °C for 8 hours. Ageing at 600, 700, 750, 800 and 900 °C for up to 150 hours was carried out. The electrolyte used for the electrochemical separation of the α'-phase - $Ni_3(Al,Ti)$ - consisted of 10 g ammonium sulphate, 10 g citric acid and 1200 ml water. One of the end surfaces of the samples was cleaned of oxides by polishing and preliminary anodic dissolution to a depth of 0.8-1 mm. The samples were then freed from precipitate, washed in ethyl alcohol, dried in air and weighed. Anodic dissolution was carried out using a current

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density of 0.06 A/cm^2, at 0 °C for 1.5 hours. Afterwards the sample and the precipitate produced were removed, washed with ethyl alcohol, dried in air and weighed. The quantity of α′-phase was determined as a percentage of the total part of the sample dissolved. The quantity of α′-phase produced increased with increasing time. On increasing the temperature from 600 to 750 °C the quantity also increased, but on increasing the temperature further to 900 °C the quantity decreased. These results did not agree with the amount of precipitate calculated from measurements of the lattice parameter of the solid solution. The results, however, are explained as follows. At 600 °C the particles have very small dimensions and their free energy will be large. Thus, during anodic dissolution, they will dissolve to a marked degree. With increased ageing time the quantity of particles and their size increase. At 700-750 °C there is much fuller precipitation and the particle size reaches 100-300 Å. With increase in ageing temperature to 800 °C and higher, the particles are much larger, the rate of their dissolution increases but the separation is less complete.

The problem of quantitative ... S/126/62/013/003/012/023
E021/E180

There are 4 figures.

ASSOCIATION: Kiyevskiy institut GVF
(Kiev Institute GVF)

SUBMITTED: May 26, 1961

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GITGARTS, M.I.

Nature of the broadening of diffraction lines during the aging of alloys. Fiz. met. i metalloved. 19 no.3:380-388 Mr '65. (MIRA 18.4)

1. Institut mashinovedeniya i avtomatizatsii, Minsk.

EXCERPTA MEDICA Sec 17 Vol 5/1 Public Health Jan 59

250. INFLUENCE OF CLIMATE AND WEATHER ON THE INCIDENCE OF PNEUMONIA AND ITS COURSE DURING THE YEAR (Russian text) - Gities I. I. - GIGIENA 1957, 2 (58-60) Graphs 1 Tables 1

Meteorological factors have a prominent influence on the incidence of pneumonia. The continental climate causes greater peaks of pneumonic illnesses in months with changing air 'fronts'. The incidence of pneumonia in Lwow and Leningrad (sea climate) was more evenly distributed through the year than in Stalino and Samarkand (continental climate). The importance of preventing colds in prophylaxis of pneumonia is stressed.

Makower - Wroclaw

GITILIS, V. L.

Cand Biol Sci - (diss) "Land mollusks of the Soviet Bukovina. (Distribution, ecology, and economic evaluation)." L'vov, 1961. 22 pp; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, L'vov State Univ imeni I. Franko); 150 copies; price not given; (KL, 7-61 sup, 227)

SOV/28-59-10-28/36

15(8)
AUTHOR: Gitin, A.M.

TITLE: Conference on Questions of Precision and Interchangeability of Articles Fashioned From Plastic

PERIODICAL: Standartizatsiya, 1959, Nr 10, pp 60-61 (USSR)

ABSTRACT: In Leningrad, a conference on questions of plastic article production accuracy and interchangeability was convened. A number of experts delivered reports. Engineer V.P. Krivosheyev - Technical Administration of Leningrad Sovnarkhoz, Candidate of Technical Sciences V.N. Gostev - Leningrad Technological Institute, and Engineer N.N. Novikova - Plant imeni "Komsomol'skaya Pravda", outlined the need for shrinkage decrease, which amounts for some kinds of plastics to 0.6-1.0%. Engineer V.A. Braginskiy - Leningrad, and Yu.A. Vorob'yeva - MVTU imeni Bauman, emphasized the importance of coordination of allowances, particularly when plastic and metal components are conjugated. Engineer A.S. Smirnov proposed paying special attention to the methods of mounting plastic components. Engi-

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Conference on Questions of Precision and Interchangeability of Articles Fashioned from Plastic

neer L.F. Gromov spoke about the method of plastic articles threading practiced over the last 20 years at the Plant "Soyuz". Engineer D.G. Selivanov dwelled on the subject of considering the specific properties of plastic mass when constructing components. Candidate of Technical Sciences A.D. Fedorov - MVTU imeni Bauman, investigated the possibility of using existing meters for measuring plastic articles. The conference decided to standardize the technological processes applied in manufacturing of plastic components, and expressed the wish that the GNTK USSR organize planning and coordination of work in the field of interchangeability and precision of articles fashioned from plastic.

GITIN, E.Sh., inzhener.

New technology for repairing gondola cars. Zheldor.transp. 39 no.6:59-61 Je '57. (MLRA 10:7)
(Railroads--Cars--Maintenance and repair)

GITIN, M.A., inzh.

New method for controlling and tuning the video channel of a television station. Vest. sviazi 24 no.12:9-10 D '64 (MIRA 18:2)

1. Estonskiy respublikanskiy radiotsentr.

SOV/110-59-4-21/23

AUTHORS: Balyberdina S.P., Gitin V.Ya., Greysukh M.A., Dobrer Ye.K. and Messerman G.T. (Engineers)

TITLE: Accelerated Methods of Drying 35 - 220 kV Current Transformers (Metody uskorennoy sushki transformatorov toka na napryazheniye 35 - 220 kv)

PERIODICAL: Vestnik Elektropromyshlennosti, 1959, Nr 4, pp 71-75 (USSR)

ABSTRACT: The drying of current transformers takes up about 40% of the total manufacturing time. This article considers methods of reducing that time. The process of drying insulation is then considered and is sub-divided into the processes of vapourisation of moisture, its displacement within the insulation and its evaporation from the surface of the insulation. To accelerate the drying process it is very desirable to heat the transformer conductors by electric current so that the flow of heat is in the same direction as the flow of moisture. It is often also necessary to heat the outside layers of insulation so that the evaporation is rapid enough. In investigating the process of drying insulation of current transformers the following methods of supplying the windings with current were tried: a.c. supply to the primary with the secondary short circuited, with this method the heat

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Accelerated Methods of Drying 35 - 220 kV Current Transformers

evolved in the secondary winding is much less than that in the primary and so the secondary does not dry quickly enough; a.c. supply to the secondary winding with the primary winding connected to an inductance, by this method suitable currents can be obtained in both windings and drying is quick; a.c. supply to the primary, with additional d.c. supply to two secondaries connected in series, if they are third and fourth secondary windings they are short circuited and by this means it is possible to accelerate drying of the secondary windings through which d.c. is passed. Both of the last two methods meet the main requirements; the first of the two is simpler but not always applicable when the secondary windings are for a rated current of 1 A, since dangerously high voltages are required. The other method gives uniform heating but the simultaneous use of two kinds of current creates practical difficulties. A table gives types of transformers, rated current, and recommended methods of

Card 2/4 connection before drying. In order to verify the calculations and to compare various methods of drying, accelerated drying tests were made on current transformers

Accelerated Methods of Drying 35 - 220 kV Current Transformers

for voltages of 35, 110, 154 and 220 kV under laboratory conditions. Thermocouples were installed at several places in the test transformers. The drying process was followed by measurements of dielectric loss and insulation resistance between secondaries and earth. Drying was considered to be complete when the electrical properties of the insulation reached steady values. Graphs of power factor and insulation resistance for current transformers type TFN-35 and TFND-110 are given in Figs 2 and 3 which also give for comparison the corresponding values when the insulation is dried by the current factory procedures. It will be seen from the graphs that the use of electric current to heat the windings has cut the drying time by a factor of 5. Similar measurements made on other current transformers dried by passage of current with the transformer in an

Accelerated Methods of Drying 35 - 220 kV Current Transformers

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oven are given in Fig 4 and it will be seen that the combined method of drying is both quicker and better. There are 4 figures, no references.

SUBMITTED: June 3, 1958

L 36267-66

ACC NR: AR6016257 SOURCE CODE: UR/0058/65/000/011/H039/H039

28
B

AUTHOR: Gitin, V. Ya.

TITLE: Displacement of rectangular waveguidee in the plane of polarization of the fundamental wave H_{10}

SOURCE: Ref. zh. Fizika, Abs. 11Zh264

REF SOURCE: Tr. Uchebn. in-tov svyazi, vyp. 25, 1965, 43-52

TOPIC TAGS: rectangular waveguide, light reflection coefficient, fundamental wave

ABSTRACT: Equations are obtained for the reflection coefficient and the conductivity equivalent of the waveguide connection during displacement of waveguides in the plane of polarization of the fundamental wave H_{10}. [Translation of abstract] [NT]

SUB CODE: 20

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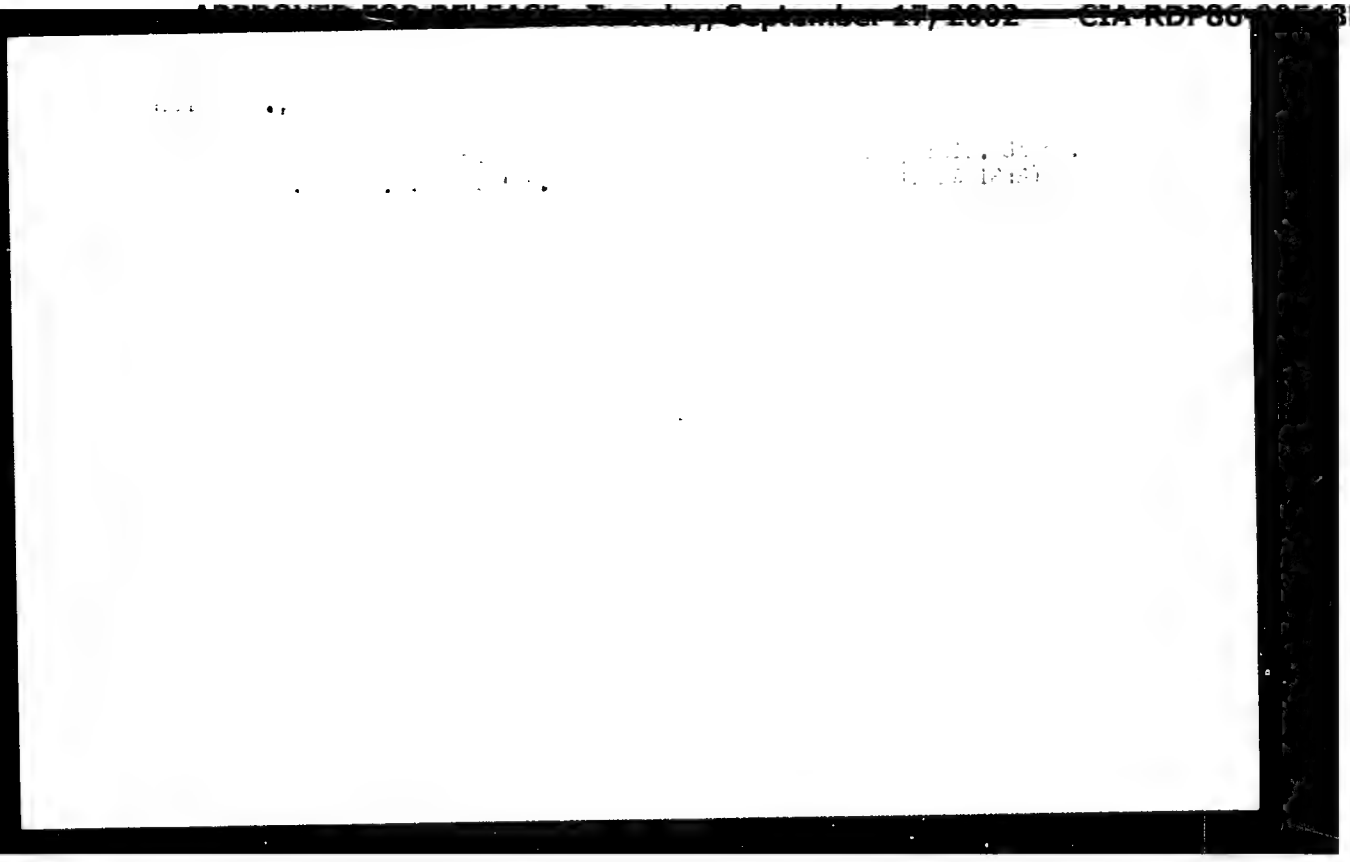

GITIN, Ye.M.

Production potentials of technological units for increasing the load of mines in Lugansk Economic Council. Nauch.soob.IGD 14:24-28 '62. (MIRA 16:1)
(Donets Basin--Coal mines and mining)

GITINA, L.Ya.

HEYLINA, TS.O., inzhener; BLAGONADEZHDIN, V.Ye., inzhener; BOGUSLAVSKIY, P.Ye., kandidat tekhnicheskikh nauk; VORONKOV, I.M., professor, GITINA, L.Ya., inzhener; GROMAN, N.B., inzhener; GOROKHOV, N.V., doktor tekhnicheskikh nauk [deceased]; DENISYUK, I.N., kandidat tekhnicheskikh nauk; DOVZHIK, S.A., kandidat tekhnicheskikh nauk; DUKEL'SKIY, M.P., professor, doktor khimicheskikh nauk [deceased]; DYKHOVICHNYY, A.I., professor; ZHITKOV, D.G., professor, doktor tekhnicheskikh nauk; KOZLOVSKIY, N.S., inzhener; LAKHTIN, Yu.M., doktor tekhnicheskikh nauk; LEVENSON, L.B., professor, doktor tekhnicheskikh nauk [deceased]; LEVIN, B.Z., inzhener; LIPKAN, V.F., inzhener; MARTYNOV, M.V., kandidat tekhnicheskikh nauk; MOLEVA, T.I., inzhener; NOVIKOV, F.S., kandidat tekhnicheskikh nauk; OSETSKIY, V.M., kandidat tekhnicheskikh nauk; OSTROUMOV, G.A.; PONOMARENKO, Yu.F., kandidat tekhnicheskikh nauk; RAKOVSKIY, V.S., kandidat tekhnicheskikh nauk; REGIRER, Z.L., inzhener; SOKOLOV, A.N., inzhener; SOSUNOV, G.I., kandidat tekhnicheskikh nauk; STEPANOV, V.N., professor; SHEMAKHANOV, M.M., kandidat tekhnicheskikh nauk; EL'KIND, I.A., inzhener; YANUSHEVICH, L.V., kandidat tekhnicheskikh nauk; BOKSHITSKIY, Ya.M., inzhener, redaktor; BULATOV, S.B., inzhener, redaktor; GASHINSKIY, A.G., inzhener, redaktor; GRIGRO'YEV, V.S., inzhener, redaktor; YEGURNOV, G.P., kandidat tekhnicheskikh nauk, redaktor; ZHARKOV, D.V., dotsent, redaktor; ZAKHAROV, Yu.G., kandidat tekhnicheskikh nauk, redaktor; KAMINSKIY, V.S., kandidat tekhnicheskikh nauk, redaktor; KOMAROV, Ye.F., professor, redaktor; KOSTYLEV, B.N., inzhener, redaktor; POVAROV, L.S., kandidat tekhnicheskikh nauk, redaktor; ULINICH, F.R., redaktor; KLORIK'YAN, S.Kh., otvetstvennyy redaktor; GLADILIN, L.V., redaktor;

(Continued on next card)

BEYLINA, TS.O. --- (continued) Card 2.

RUPPENEYT, K.V., redaktor; TERPIGOREV, A.M., glavnyy redaktor; BARABANOV, F.A., redaktor; BARANOV, A.I., redaktor; BUCHNEV, V.E., redaktor; GRAFOV, L.Ye., redaktor; DOKUKIN, A.V., redaktor; ZADEMIDKO, A.N., redaktor; ZASYAD'KO, A.F., redaktor; KRASNIKOVSKIY, G.V. redaktor; LETOV, N.A., redaktor; DISHIN, G.L., redaktor; MAN'KOVSKIY, G.I., redaktor; MEL'NIKOV, N.V., redaktor; ONIKA, D.G., redaktor; OSTROVSKIY, S.B., redaktor; POKROVSKIY, N.N., redaktor; POLSTYANOY, G.N., redaktor; SKOCHINSKIY, A.A., redaktor; SONIN, S.D., redaktor; SPIVAKOVSKIY, A.O., redaktor; STANCHENKO, I.K., redaktor; SUDOPLATOV, A.P., redaktor; TOPCHIYEV, A.V., redaktor; TROYANSKIY, S.V., redaktor; SHEVYAKOV, L.D., redaktor; BYKHOVSKAYA, S.N., redaktor izdatel'stva; ZAZUL'SKAYA, V.F., tekhnicheskiy redaktor; PROZOROVSKAYA, V.L., tekhnicheskiy redaktor.

[Mining; an encuclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red. A.M. Terpigorev. Chleny glav.red. F.A. Barabanov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po ugol'noi promysh]. Vol.1. [General engineering] Obshchie inzhenernye svedeniia. Redkollegiia toma S.Kh.Klerik'ian i dr. 1957. 760 p.
(Mining engineering) (MLRA 10:10)

SOV/79-29-7-24/83

5(3)

AUTHORS: Radzhabli-Seidova, N. A., Khromov, S. I., Gitina, R. K., Balenkova, Ye. S., Treshchova, Ye. G., Kazanskiy, B. A.

TITLE: Contact Transformations of 1,1-Dimethyl Cyclohexane and 1-Methyl-1-ethyl Cyclohexane in the Presence of an Aluminosilicate Catalyst (Kontaktnyye prevrashcheniya 1,1-dimetiltsiklogeksana i 1-metil-1-etil-tsiklogeksana v prisutstvii alyumosilikatnogo katalizatora)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2212-2218 (USSR)

ABSTRACT: The numerous Russian petroleum types contain among other cycloparaffin hydrocarbons 1,1-dimethyl cyclohexane and 1,1,3-trimethyl cyclohexane (Ref 1). According to reference 2 also the transformations of 1,1-dimethyl cyclohexane at 540° over an aluminosilicate catalyst are described. For the authors it was of interest to investigate the behavior of the most simple mixed methyl alkyl cyclohexanes in the catalytic cracking process over an aluminosilicate catalyst. For this purpose the behavior of 1,1-dimethyl cyclohexane and 1-methyl-1-ethyl cyclohexane over the above catalyst were investigated at 500°. In this connection gaseous products, a liquid condensate, and coke which separated on the catalyst were

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Contact Transformations of 1,1-Dimethyl Cyclohexane and 1-Methyl-1-ethyl Cyclohexane in the Presence of an Aluminosilicate Catalyst

SOV/79-29-7-24/83

obtained. The gaseous products were first fractionated at low temperatures and then determined. The liquid condensate was subjected to an accurate rectification, chromatographic adsorption on silica gel as well as to optical and chemical investigations. The following per cent composition of the reaction products of 1,1-dimethyl cyclohexane were found: hydrocarbon 21.4%, liquid paraffin hydrocarbons 2.6%, naphthene hydrocarbons 8.4, aromatic hydrocarbons 45.2%, coke 22.4%. For 1-methyl-1-ethyl cyclohexane (in wt%): 10.8% gaseous hydrocarbons, 23.0% mixture of paraffin naphthene hydrocarbons, 40.5% aromatic hydrocarbons, 25.7% coke. Under the chosen conditions of catalysis the separation of the alkyl groups which are in the quaternary cyclic carbon atom, hydrocracking process, methylation, aromatization as well as the isomerization of the six-membered cycles into five-membered ones take place. The main products are aromatic hydrocarbons and in small quantities paraffin and

Contact Transformations of 1,1-Dimethyl Cyclohexane and 1-Methyl-1-ethyl Cyclohexane in the Presence of an Aluminosilicate Catalyst SOV/79-28-7-24/83

naphthene-hydrocarbons. The direction of the contact transformations of the mixed dialkyl cyclohexanes are illustrated by the scheme in the experimental part. There are 6 tables and 11 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: June 3, 1958

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SHIROKOVA, N.I.; RUSSKOVA, Ye.F.; ALISHOYEVA, A.B.; GITINA, R.M.; LEVKOYEV, I.I.; KOZLOV, P.V.

Polycarbonates. Part 3: Synthesis of 2, 2-bis(4'-hydroxyphenyl) propane polycarbonates in a homogeneous medium and their properties. Vysokom.soed. 3 no.4:642-649 Ap '61. (MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy kino-foto institut.
(Carbonic acid)

GITINA, R.M.

2

3/063/62/007/002/012/014
A057/A126

AUTHORS: Zaytseva, Ye.L., Braz, G.I., Yakubovich, A.Ya., Bazov, V.P., Petrova, L.G., Gitina, R.M.

TITLE: Synthesis of mixed 2,4,6-trialkyl-1,3,5-triazines and polymer triazine compounds from iminoesters

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva imeni D.I. Mendeleyeva, v. 7, no. 2, 1962, 232 - 233

TEXT: In continuation of earlier experiments in which symmetric 2,4,6-trialkyl- and 2,4,6-triaryl-substituted 1,3,5-triazines were prepared by cyclization of iminoesters in the presence of catalytic quantities of their salts, 2,4,6-substituted triazines mixed in an analogous way were prepared by combined cyclization with esters of different iminoacids in the present investigation. When the paper published earlier was already in press, it was observed, that F. Schaefer, and G. Peters reported on the same subject [Ref. 2: J. Org. Chem., 26, 2778 (.961)]. If a mixture of ethyl esters of imino acid and imino butyric acid are cyclisized in the presence of 6 molo% of the chlorohydrate of iminoesters, a mixture of four substituted triazines is obtained, namely a) R = R' = CH_3 X

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S/063/62/007/002/012/014
A057/A126

Synthesis of mixed .....

(where R = positions 4 and 6, and R' = position 2 in the symmetric triazine), b) R = CH_3, R' = n-C_3H_7, c) R = n-C_3H_7, R' = CH_3, d) R = R' = n-C_3H_7. The composition of the mixture depends upon the proportion of the initial iminoesters. By distillation over metallic sodium the pure esters b) and c) could be separated and their characteristics determined. 2,4,6-tris-(ω-carboetoxybutyl)-triazine was synthesized by cyclization of the diethyl ester of mono-iminoadipic acid and specified. A structurized polymer was prepared by cyclization of the diethylester of bis-iminoadipic acid. The polymer is a yellow, crumbling substance, not soluble in common organic solvents, but swelling in benzene. The same polymer can be obtained from dibenzylester of bis-iminoadipic acid. According to the infrared spectrum the polymer contains triazine rings, and apparently C = NH groups. A triazine polymer can be obtained also by combined cyclization of diethyl ester of bis-imino adipic acid and ethyl ester of imino acetic acid. There are 1 table and 3 references.

ASSOCIATION: Fiziko-khimicheskiy institut im. L.Ya. Karpova (Physico-chemical Institute imeni L.Ya. Karpov)

SUBMITTED: December 22, 1961

ZAYTSEVA, Ye.L.; BRAZ, G.I.; YAKUBOVICH, A.Ya.; BAZOV, V.P.; PETROVA, L.G.; GITINA, R.M.

Synthesis of mixed 2,4,6-trialkyl-1,3,5-triazines and polymer triazine compounds from iminoesters. Zhur.VKHO 7 no.2:232-233 '62. (MIRA 15:4)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova.
(Triazine) (Esters)

ZAYTSEVA, Ye.L.; GITINA, K.K.; YAKUBOVICH, A.Ya.; KHAZ, G.I.; PETROVA, L.G.; BAZOV, V.P.

Synthesis and some properties of [illegible] acrylic acid esters. Zhur. ob. khim. 34 no.[illegible] Ap[illegible] [illegible]

L 01039-67 EWT(m)/EWP(j)/T IJP(c) WW/JW/RM
ACC NR: AP6019549 (A) SOURCE CODE: UR/0190/66/008/006/1137/1137

42
39
B

AUTHOR: Yakubovich, A. Ya.; Gitina, R. M.

ORG: none

TITLE: Preparation of fluorinated polyamides by low temperature polycondensation in amide solvents

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 6, 1966, 1137

TOPIC TAGS: polyamide, fluorinated organic compound, polycondensation, polymerization kinetics

ABSTRACT: Preparation of polyfluoroglutamides by reacting dichloroglutamides of the perfluoroglutaric acid with 3,3'-dioxybenzidine in diamethylacetamide in dry argon atmosphere at -10° to 0°C is reported. The viscosity of a solution of 0.5 g polymer in 100 ml dimethylfluoroamide at 25°C was: $[\eta_{log}] \sim 0.10\text{-}0.15$. The structure of the polyfluoroglutamides was confirmed by IR spectroscopy. The success of this preparation procedure is explained in terms of the high rate of interaction of the dimethylacetamide solvent with both the starting dichloroanhydride of the perfluoroglutaric acid and the active terminal chloroanhydride groups of the macromolecules; the latter interaction leads to chain termination. In order to establish the ratio of the rates of growth and cleavage of the polymer molecules, subsequent syntheses were based on

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ACC NR: AP6019549

(1) the less reactive dichloroanhydrides of the iso- and terephthalic acids and (2) the dihydrazide of perfluoroglutaric acid instead of diamide. In this case, the polycondensation of an equimolar mixture of the starting components in N-methylpyrrolidone at 0°C led to the previously unreported high molecular fluorinated polyhydrazides: poly-1-isophthalyl-2-perfluoroglutarylhydrazide and poly-1-terephthalyl-2-perfluoroglutarylhydrazide. The viscosity of these polymers in dimethylformamide is: $[\eta_{log}] = 0.6\text{-}0.7$.

SUB CODE: 07/ SUBM DATE: 01Feb66/ ORIG REF: 002/ OTH REF: 002

awm

Card 2/2

GITIS, A., inzh.

Erecting modern rolling mills. Prom. stroi. i inzh. soor. 5 no.5:12-16 S-O '63. (MIRA 16:12)

GITIS, A.I., inzh.

Simultaneous assembling of mixers and casting cranes in a currently operating shop. Nov.tekh.mont.i spets.rav. v stroi. 21 no.10:8-10 O '59. (MIRA 12:11)

1. Krivorozhskoye upravleniye Prokatmontazh.
(Metallurgical plants--Equipment and supplies)

GITIS, A.I., inzh.

Inspection of the equipment of rolling mills. Mont. i spets. rab. v stroi. 24 no.1:12-14 Ja '62. (MIRA 15:7)
(Rolling-mill machinery)

GITIS, B.K.

Making pamphlets on large-scale topographic surveys. Geod.i kart. no.4:48-49 Ap '62. (MIRA 15:12)
(Topographical surveying)

PHASE I BOOK EXPLOITATION SOV/1590

28(1,2); 6(4); 7(7); 9(0)

Gitis, E.I.

Elektroradioavtomatika; elementy avtomaticheskikh i vychislitel'nykh ustroystv aviatsionnykh radiustanovok (Radio-Electronic Automation; Elements of Automatic and Computing Equipment in Aviation Radio Installations) Moscow, Gosenergoizdat, 1959. 422 p. 30,000 copies printed.

Ed.: V.I. Shamshur; Tech. Ed.: G.Ye. Larionov

PURPOSE: This book was approved by the Ministry of Higher Education, USSR, as a textbook for students of aviation vuzes specializing in radio engineering. It may also be useful to radio engineers interested in the fundamentals of designing automatic and computing equipment.

COVERAGE: The book contains basic information on automatic control and computing systems used in aviation radio installations. The construction of antenna drives, of remote angle transmission, and of low-power servomechanisms is discussed in the first part of the book. The second part describes analog and digital computers. The

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textbook is used for the course "Radio-Electronic Automation" and is based on lectures delivered by the author from 1946 to 1958 at the Radio Engineering Department of the Moscow Aviation Institute imeni S. Ordzhonikidze. Considering the limitations of the book, problems concerning components and devices covered in other courses given by the Department are not included in the book. Problems of designing automatic range- and angle-tracking systems are not included since they, too, are presented in other courses. V.K. Grishin helped to write sections 3 and 5 of Chapter 3 and sections 3,4 and 5 of Chapter 4. N.Ya. Matyukhin helped in writing Chapter 8. The author thanks Professor G.M. Zhdanov, N.I. Chistyakov, Professor M.R. Shura-Bura and Candidate of Technical Sciences I.Ya. Lekhtman for reviewing the manuscript. The author gives a short historical sketch of the development of automatic control and computer technique and mentions the following Soviet scientists who made contributions to the field: (automatic control) I.N. Voznesenskiy, V.S. Kulebakin, A.V. Mikhaylov, A.A. Andronov, N.M. Krylov, N.N. Bogolyubov, V.V. Solodovnikov, Ya.Z. Tsypkin, A.A. Fel'dbaum, V.I. Kovalenko, V.K. Arkad'yev, M.P. Kostenko, V.A. Trapeznikov, A.G. Iyosif'yan, and B.S. Sotskov; (computer technique) I.S. Bruk, V.A. Trapeznikov, V.B. Ushakov, A.A. Fel'dbaum, G.M. Petrov, L.N. Fintsner, B.Ya. Kogan,

S.A. Lebedev, Yu.Ya. Bazilevskiy, B.I. Rameyev, L.A. Lyusternik, A.A. Lyapunov, M.R. Shura-Bura, L.V. Kontorovich, and K.A. Semendyev. He also mentions the universal digital computers "BESM", "Strela", M-2 and M-3, and "Ural", which were developed in the USSR. There are 43 references, of which 30 are Soviet and 13 translations from the English.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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~~28 (1)~~ 16.6800

AUTHOR: Gitis, Emmanuil Isaakovich, Candidate of Technical Sciences, Docent

SOV/161-59-1-17/25

TITLE: Principles of Conversion of Analog Quantities Into Digital Quantities and of Digital Quantities Into Analog Quantities

PERIODICAL: Nauchnyye doklady vysshey shkoly. Elektromekhanika i avtomatika, 1959, Nr 1, pp 139-147 (USSR)

ABSTRACT: The general principles in the construction of analog-to-digital converters and digital-to-analog converters as well as their classification are investigated here. It is pointed out that no satisfactory classification has been made in more than 200 Soviet and foreign publications. A uniform terminology has to be introduced. In order to assure the proper choice of the main characteristics for a classification, general laws have to be established to which the construction of devices and their properties are subjected. For the selection of the main principles in analog-to-digital conversion the methods of measuring the analog quantity are investigated. It is shown that in principle only 3 measuring methods are possible: (1) method of calculating the number of the unit increments of the analog quantity. (2) Comparison- and subtraction method.

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(3) Method of one single reading. In digital-to-analog conversion there are only two measuring methods: that of addition with reference to weight and that of the addition of unit analog quantities. All these conversion methods have two characteristics in common: they are constructed according to an open cycle, i.e. they have no feedback circuit and permit only conversion in one direction. Another way of constructing these converters is shown up. These converters allow conversion in both directions. They have a feedback circuit and, therefore, also a reference circuit (a zero instrument). They are termed universal converters. Two types are mentioned: a universal converter with comparison of the analog quantities, and a universal converter with comparison of the digital quantities. Figures 1 and 2 give the analysis diagram of these types. On the basis of the conversion principles investigated in the present paper a block diagram of the converter classification is given in figure 3. The subdivision of both main groups - analog-to-digital converter and digital-to-analog converter is described in detail. The publication of this article was recommended by the institute mentioned in the "Association".

Principles of Conversion of Analog Quantities Int... SOV/161-59-1-17/25
Digital Quantities and of Digital Quantities Into Analog Quantities

There are 4 figures and 8 references, 5 of which are Soviet.

ASSOCIATION: Moskovskiy aviatsionnyy institut (Moscow Aviation Institute)

SUBMITTED: October 28 1958

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S/123/61/000/009/017/027
A004/A104

9,7300

AUTHOR. Gitis, E. I.

TITLE: Suggestions to classify converters of analog magnitudes into digital ones

PERIODICAL: Referativnyy zhurnal, Mashinostroyeniye, no. 9, 1961, 19, abstract 9D138 (V sb. "Teoriya i primeneniye diskretn. avtomat. sistem". Moscow, AN SSSR, 1960, 323-325)

TEXT: The author gives an account of the fundamental principles of converting analog into digital magnitudes based on the following methods of measuring the analog magnitude: 1) method of counting the numbers of unit increments of the analog magnitude; 2) comparison and subtraction method; 3) method of dimensional coding. The author suggests a classification of converters of analog magnitudes into digital ones based on the principles of conversion, and presents a structural diagram of analog-to-digital converter classification. There is 1 figure.

A. Yevseyeva

[Abstractor's note: Complete translation]

B

GITIS, E.I.

A good book requires additions ("Fundamentals of electric measurements, electronic equipment, and electric control used in the manufacture of instruments" by S.F.Korndorf. Reviewed by E.I.Gitis). Priborostroenie no.4:31-32 Ap '60.
(MIRA 13:6)

(Instrument manufacture) (Electric measurements)
(Electric controllers)

NETREBENKO, Konstantin Antonovich; GITIS, E.I., red.; BORUNOV, N.I., tekhn. red.

[Automatic digital compensators; use of compensation methods for coding electrical values] TSifrovye avtomaticheskie kompensatory; kodirovanie elektricheskikh velichin kompensatsionnymi metodami. Moskva, Gos. energ. izd-vo, 1961. 175 p. (Biblioteka po avtomatike, no.41) (MIRA 14:10)

(Automatic control) (Electronic calculating machines)
(Electric measurements)

PHASE I BOOK EXPLOITATION SOV/5866

Gitis, Emanuil Isaakovich

Preobrazovateli informatsii dlya elektronnykh tsifrovykh vychislitel'nykh ustroystv (Information Converters for Electronic Digital Computers) Moscow, Gosenergoizdat, 1961. 375 p. 15,000 copies printed.

Ed.: V. B. Silin; Tech. Ed.: G. Ye. Larionov.

PURPOSE : This book is intended for engineers and technicians concerned with the development and operation of computers, control and telemechanics systems, and other systems using converters. It may also be used as a textbook by students taking courses in computing engineering at schools of higher education.

COURSES: Principles of the design, circuitry, and construction of analog-to-digital and digital-to-analog converters are described. Attention is given to coding methods and to the

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basic elements of encoders and their classification. Ch. VI. was written jointly by the author and N. M. Strogovich, Candidate of Technical Sciences. A. V. Baltrushevich, Engineer, participated in the writing of Secs. 2 and 4 of Ch. VII. The author thanks B. M. Kagan, Doctor of Technical Sciences, V. B. Silin, Candidate of Technical Sciences, and Ye. G. Pronin, V. S. Uritskiy, and Ye. R. Shur-Bur for suggestions and editorial assistance. There are 175 references: 54 Soviet, 112 English, 2 French, 2 Czech, 3 German, 1 Polish, and 1 Italian.

TABLE OF CONTENTS:

ZAVOLOKIN, Anatoliy Kuz'mich; GITIS, E.I., red.; SHIROKOVA, M.M., tekhn. red.

[Series converters of continuous quantities to numerical equivalents] Posledovatel'nye preobrazovateli nepreryvnykh velichin v chislovye ekvivalenty. Moskva, Gosenergoizdat, 1962. 70 p. (Biblioteka po avtomatike, no.56) (MIRA 15:7)
(Electronic calculating machines)
(Electronic data processing)
(Automatic control)